

WHAT IS CLAIMED IS:

1. A composite material, comprising:
a cementitious matrix; and
cellulose fibers incorporated into the cementitious matrix, wherein the cellulose fibers comprise a blend of bleached and unbleached cellulose fibers.
2. The composite material of Claim 1, wherein the bleached cellulose fibers comprise less than about 50% of the total cellulose fibers incorporated into the matrix.
3. The composite material of Claim 2, wherein the bleached cellulose fibers comprise between about 5%-25% of the total cellulose fibers incorporated into the matrix.
4. The composite material of Claim 1, wherein the bleached cellulose fibers have an average Kappa number of less than or equal to about 10.
5. The composite material of Claim 1, wherein the bleached cellulose fibers comprise fibers from species selected from the group consisting of Douglas fir, hemlock, spruce, southern yellow pines, kenaf and redwood.
6. The composite material of Claim 1, wherein the bleached cellulose fibers comprise fibers of *P. Radiata* pine.
7. The composite material of Claim 1, wherein the unbleached cellulose fibers comprise fibers from species selected from the group consisting of Douglas fir, hemlock, white fir, spruce, southern pine, kenaf and redwood.
8. The composite material of Claim 1, wherein the bleached and unbleached cellulose fibers comprise about 0.5%-20% by weight of the composite material.
9. The composite material of Claim 1, wherein the bleached and unbleached cellulose fibers comprise cellulose fibers having an average fiber length of between about 1 mm to 3.5 mm.
10. The composite material of Claim 1, wherein the modulus of rupture (MOR) of the composite material is substantially equal to or greater than the MOR of an equivalent composite material reinforced with unbleached, premium grade cellulose fibers.
11. The composite material of Claim 1, wherein the toughness energy of the composite material is substantially equal to or greater than the toughness energy of an equivalent composite material reinforced with unbleached, premium grade cellulose fibers.

12. A method of manufacturing a fiber reinforced cement composite material, comprising:

providing bleached cellulose fibers and unbleached cellulose fibers;

mixing the bleached and unbleached cellulose fibers with a cementitious binder to form a fiber cement mixture;

forming the fiber cement mixture into a fiber cement article of a pre-selected shape and size; and

curing the fiber cement article.

13. The method of Claim 12, wherein providing the bleached cellulose fibers comprises treating cellulose fibers with a bleaching agent.

14. The method of Claim 13, wherein the bleached cellulose fibers are treated with the bleaching agent to result in an average Kappa number of less than or equal to about 10.

15. The method of Claim 12, wherein providing the unbleached cellulose fibers comprises providing unbleached, standard grade cellulose fibers.

16. The method of Claim 12, wherein mixing the bleached and unbleached cellulose fibers comprises mixing the cellulose fibers in pre-selected proportions to provide the composite material with pre-determined physical properties.

17. The method of Claim 16, wherein the pre-selected proportions of bleached and unbleached cellulose fibers provide the composite material with a modulus of rupture (MOR) that is substantially equal to or greater than the MOR of an equivalent composite material reinforced with only premium grade cellulose fibers.

18. A composite building material, comprising:

a cementitious matrix; and

a blend of cellulose fibers comprising bleached and unbleached cellulose fibers, wherein the blend of cellulose fibers is selected to provide the building material with pre-determined flexibility and strength.

19. The building material of Claim 18, wherein the blend of cellulose fibers is selected to provide the building material with flexibility and strength that are substantially

equal or superior to the flexibility and tensile strength of an equivalent building material reinforced with only premium-grade cellulose fibers.

20. The building material of Claim 18, wherein the blend of cellulose fibers is selected provide the building material with flexibility and strength that are substantially equal or superior to the flexibility and tensile strength of an equivalent building material reinforced with only bleached cellulose fibers.

21. The building material of Claim 18, wherein the blend of cellulose fibers comprises less than about 50% bleached cellulose fibers.

22. The building material of Claim 18, wherein the blend of cellulose fibers does not include premium grade cellulose fibers.

23. The building material of Claim 21, wherein the blend of cellulose fibers comprises about 5%-25% bleached cellulose fibers.

24. The building material of Claim 18, wherein the bleached cellulose fibers have a Kappa number of less than about 10.

25. A composite material, comprising:
a cementitious matrix;
a first portion of cellulose fibers having a Kappa number of less than or equal to about 10; and
a second portion of standard grade cellulose fibers having a Kappa number of greater than about 10.

26. The composite material of Claim 25, wherein the first portion of cellulose fibers comprises premium grade cellulose fibers.

27. The composite material of Claim 25, wherein the first portion of the cellulose fibers comprises less than about 50% by weight of the total amount of the two portions of cellulose fibers combined.